



IIT ROORKEE



NPTEL ONLINE
CERTIFICATION COURSE

TECHNOLOGY OF MOLDING

Sand preparation and reclamation

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Sand conditioning

- In order to obtain good castings, sand used for moulding must be correctly conditioned
- The sand must possess all the properties so as to give good quality of cast product.
- Used sand should be treated appropriately so that it can further be used.
- Frequent quality control tests should be carried out to ensure that properties of sand do not fall below desired minimum standards.

- Proper sand conditioning and preparation helps as follows:
 - Uniform distribution of binder around sand grains
 - Moisture evenly dispersed and properly controlled
 - Properly aerated sand
 - Sand delivery at proper temperature
 - Foreign particles separated from sand

Sand preparation

- Natural bonded sand:
 - Proper moisture content
 - Burnt sand to be removed after use
 - Aeration
 - Application of facing sand (nest to pattern)
 - Use of additives like coal dust



- **Synthetically bonded sand:**
 - Unbonded sand to be placed in muller and required amount of binder and additives added
(for coremaking)
 - Selection of proper bonding material
 - Use of molasses and linseed oil
 - Proper baking

Sand reclamation

- Treatment of used molding sand so that it regains original condition and can be used again and again with minimum addition of new sand.
 - Crushing of sand lumps
 - Removal of bond from grain surfaces



- Type of facilities or equipment required depends on
 - Quantity of sand to be handled
 - Kind of binder and its quantity
 - Extent of mechanization used in foundry
 - Overall economics of sand recycling



- Mechanical/ chemical/ thermal means
 - Lump breaking devices (vibratory system)
 - Thrown against wear resistant stationary surface so that coating goes off.
 - By washing in hot water
 - Heated to 650-800°C to burn organic and carbonaceous material

Sand reclamation of chemically bonded sand

- Basic requirements of chemically bonded system:
 - Sand should maintain acceptable LOI value by reducing thickness of resin coating on sand grains
 - Reclamation system should avoid excessive generation of fines caused by fracturing of sand grains
 - Lump crushing operation is necessary prior to reclamation
- Use of cryogenic technology have also been reported.





Sand preparation equipment

- Magnetic separator
- Riddle
- Muller
- Aerator



THANKS

